

Blue

## Work Order ID 55782

February 1, 2010 10:11:43 AM

Page 1

Item ID: D206-667-203BL

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft, Blue

Start Date: 2/02/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/18/10 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: *AD*Date: *10-2-01* Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D206-667-243

C

0.00

100

DC

Document Control

DOCUMENT CONTROL

Memo

0.00

Photocopy bluefile and create labels as per PPP D206-667-203 CHG003

*5 labels**AD for LL 10/02/05*

110

CNC Bend 2

CNC Alpha 160 Bender

BENDING MACHINE - CROSSTUBES

0.00

Memo

0.00

Bend tube as per Dwg D206-667-243 using CNC bender program 206L-AF and Folio FT

*QY Q MB 10-02-02*

120

QC

Quality Control

QC15- Crosstube Dimensional Check

0.00

Memo

0.00

*=> 510/02/02**71*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 55782

February 1, 2010 10:11:43 AM

Page 2

Item ID: D206-667-203BL

Accept

Revision ID:

Item Name: Crosstube Aft, Blue

Start Date: 2/02/10 Start Qty: 1.00

Required Date: 2/18/10 Req'd Qty: 1.00

Reference:

Approvals: Process Plan: Date: Tooling: Date:

QC: Date: SPC (Y/N): Date:

Run Start  
Stop

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130



Crosstubes

Crosstubes

Crosstubes

Memo

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D206-667-243. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D206-667-243. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243

6-Drill Fwd rivet holes using drill Jig DT8789FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D206-667-243.

8-C'sink holes as per Dwg D206-667-243.

9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-243 Inside of Cuff(Donot engrave on outside of tube)

10 -Deburr & Inspect for surface damage. Repair damage within limits as per Dwg

MB  
10-02-02

MB  
10-02-03

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 55782**

February 1, 2010 10:11:43 AM

Page 3

Item ID: D206-667-203BL

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft, Blue

Start Date: 2/02/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/18/10 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

D206-667-243

140

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

1 - ADM  
- 10-2-3

150

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

⇒ Soldered

160

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

⇒ Soldered

⑦

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 55782**

February 1, 2010 10:11:44 AM

Page 4

Item ID: D206-667-203BL

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft, Blue

Start Date: 2/02/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/18/10 Req'd Qty: 1.00

Customer:




Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170  Outsource2	Outsource process - NDT per QSI038 4.1	0.00							
Outsource process - NDT	<b>Memo</b> Liquid Penetrant Inspection as per QSI 038Or Issue P/O: <u>11364</u> LPI as per ASTM 1477 Level 2 Attach copy of NDT results to work order	0.00							<i>PH 10-2-14</i> <i>(1)</i>
180  Packaging	Packaging	0.00							
Packaging	<b>Memo</b> Ensure copy of NDT results attached to work order.	0.00							<i>P-10/2/12</i> <i>(1)</i>
190  QC	QC5- Inspect part completeness to step on W/O	0.00							
Quality Control	<b>Memo</b> Ensure results are as per Dwg D206-667-243	0.00							<i>MA 10 02 17</i> <i>(1)</i>

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**Work Order ID 55782**

February 1, 2010 10:11:44 AM

Page 5

Item ID: D206-667-203BL

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft, Blue

Start Date: 2/02/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/18/10 Req'd Qty: 1.00

Customer:

Reference:

Run Start

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

200

0.00



SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube grey as per QSI 005 4.2  
2-Paint outside crosstube *Primer: 110918*  
Delfleet Blue B *113171*  
Clear Delfellet B *110896*

as per QSI 005 4.2

PRIME:

Start Time: *10:00*  
Finish Time: *11:00*

PAINT:

Start Time: *3:00*  
Finish Time: *4:00**MA* *10* *02* *17* *①*

210

0.00



QC

QC14- Inspect Spray Paint

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

*8* *10-02-18*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 55782**

February 1, 2010 10:11:44 AM

Page 6

Item ID: D206-667-203BL

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft, Blue

Start Date: 2/02/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/18/10 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

220

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Install nut plates as per Dwg D206-667-243.

m 10 02 18

230

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Install support using 0.03" to 0.06" thick layer of magnobond 6398 per QSI 015. Let cure for 12h after installation and prior to packaging. Note: (3) top holes should be facing up.

A/R Magnobond 6398 : 112417 exp. 01/2011

2-Install supports and clamps as per Dwg D206-667-243. Torque clamps to 80-100 in lb

m 10 02 18 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 55782**

February 1, 2010 10:11:44 AM

Page 7

Item ID: D206-667-203BL

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft, Blue

Start Date: 2/02/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/18/10 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

240

QC5- Inspect part completeness to step on W/O

0.00

S. 10/02/23



QC

Memo

0.00

Quality Control

250

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

10-2-25 SP

260

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

S. 10/02/25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# Picklist Print

February 1, 2010 10:11:48 AM

Page 1

Work Order ID: 55782

Parent Item: D206-667-203BL

Parent Item Name: Crosstube Aft, Blue

Comments:

Start Date: 2/02/10

Required Date: 2/18/10

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN5-10A Bolt		Purchased	No				Each	102.0000	10.0000			

Warehouse  
Location

Loc Qty

Loc Code

Main Warehouse

ST

102

107013

8

110363

2

112314

1

113149

1

113524

90

AN5-32A

Purchased

No

Each

172.0000 / 4.0000

Warehouse  
Location

Loc Qty

Loc Code

Main Warehouse

ST

172

106242

3

106519

4

110363

17

112933

48

113121

100

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Page 2

February 1, 2010 10:11:48 AM

Work Order ID: 55782

Parent Item: D206-667-203BL

Parent Item Name: Crosstube Aft, Blue


Comments:

Start Date: 2/02/10

Required Date: 2/18/10

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN5-34A  Bolt		Purchased	No				Each	146.0000	4.0000			

10-2-25 SP

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	146	
104679	2	
107013	2	
113149	92	
113226	50	

QSI 017 SP  
113149 00563 d

AN960JD516

Purchased No

Each 0.0000 18.0000

Washer

D206-667-203TRN

Manufactured No

Each 4.0000 1.0000

Crosstube Turning Detail

1113524 10-2-25 SP

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FG	4	
53414	1	
53415	1	
53649	1	
53651	1	

42M 10-2-2 (1)

February 1, 2010 10:11:48 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

February 1, 2010 10:11:48 AM

Work Order ID: 55782



Parent Item: D206-667-203BL



Parent Item Name: Crosstube Aft, Blue

Start Date: 2/02/10

Required Date: 2/18/10

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	--------------------------	---------------	----------------	--------

D2873-043

Manufactured No

Each 47.0000 2.0000



Nut Plate Assembly

<u>Warehouse</u> <u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-------------------------------------	----------------	-----------------

Main Warehouse

ST	47	
45370	2	
45422	1	
<u>50002</u>	4	
50871	20	
53966	20	

ml 10 02 18

D2873-045

Manufactured No

Each 65.0000 2.0000



Nut Plate Assembly

<u>Warehouse</u> <u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-------------------------------------	----------------	-----------------

Main Warehouse

ST	65	
45210	3	
<u>50001</u>	22	
53967	20	
53968	20	

ml 10 02 18

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

February 1, 2010 10:11:48 AM

Work Order ID: 55782



Parent Item: D206-667-203BL



Parent Item Name: Crosstube Aft, Blue

Start Date: 2/02/10

Required Date: 2/18/10

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2892-1		Manufactured	No				Each	51.0000	2.0000			



Support

Blue

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	51	
41986	12	
42785	20	
53124	13	
<u>53348</u>	6	

W 10/02/18

D3595-063-450

Manufactured No



RUBBER CUSHION

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
LG	51.15767369	
52447	51.1576737	
Main Warehouse		
ST	104.9689	
38959	2	
43210	2.59	
46465	0.3789	
<u>53775</u>	100	

W 10 02 18

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# Picklist Print

February 1, 2010 10:11:48 AM

Work Order ID: 55782

Parent Item: D206-667-203BL

Parent Item Name: Crosstube Aft, Blue



Comments:

Start Date: 2/02/10

Required Date: 2/18/10

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS20601-AD4W10		Purchased	No				Each	159.0000	14.0000			
												
RIVET												

Warehouse                      Loc Qty                      Loc Code  
Location

Main Warehouse

ST    159

110665    16

111177    43

113220    100

*m 10 02 18*

MS21042L5

Purchased

No

Nut



Each    533.0000

4.0000



*10-2-25-9*

Warehouse                      Loc Qty                      Loc Code  
Location

Main Warehouse

ST    533

110382    10

111636    1

112314    22

113523    300

113537    200

*4*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

February 1, 2010 10:11:49 AM

Work Order ID: 55782



Parent Item: D206-667-203BL



Parent Item Name: Crosstube Aft, Blue

Start Date: 2/02/10

Required Date: 2/18/10

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21920-22		Purchased	No				Each	62.0000	4.0000			



Clamp(per MIL-DTL-8783C)



<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	62	
109495	6	
110260	6	
<u>111210</u>	50	

m/ 10/02/18

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

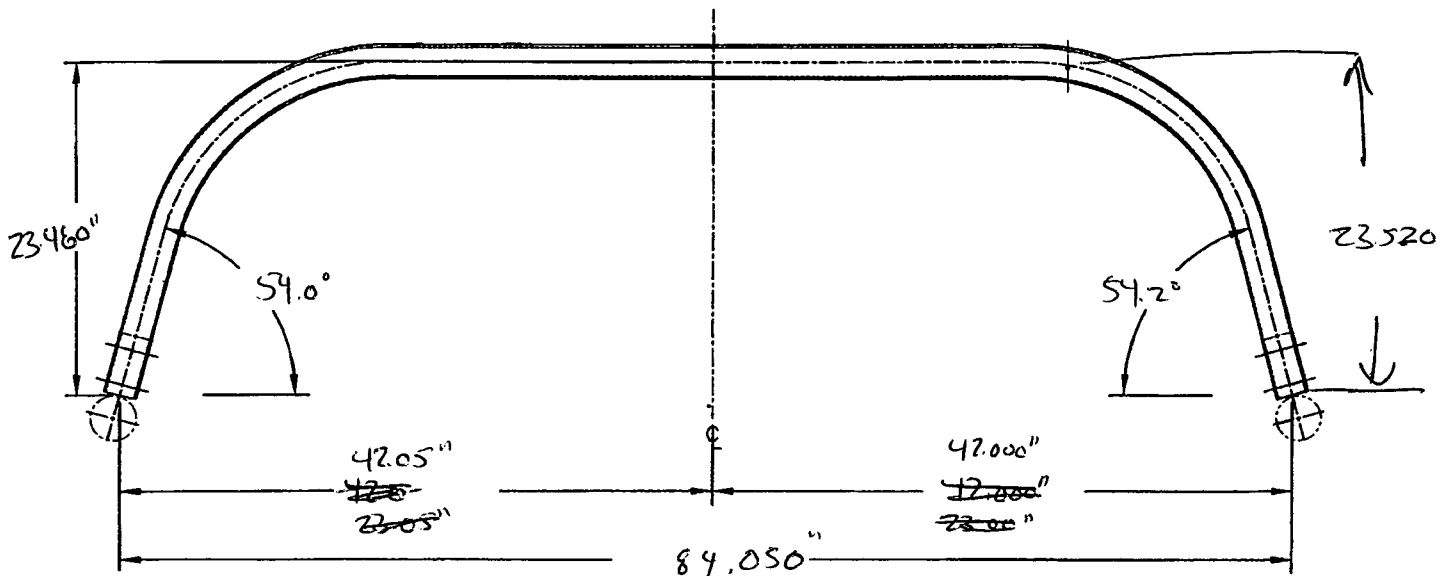
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	55782
<b>Description:</b> Crosstube High Aft (206L)		<b>Part Number:</b>	D206-667-203
<b>Inspection Dwg:</b> D206-667-243 <b>Rev:</b> C			<b>Page 1 of 1</b>

Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	41.79	42.05
Angle	54	56
Total Span	83.58	84.1



Comments

QC15 Inspection	S
Date	10/02/12

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.11.17	Dwg Rev updated	KJ	
C	09.12.14	Dimensions update per Dwg Rev C	KJ	

Item	Qty	Part Number	Description
	-243		
1	X	D206-667-243	CROSSTUBE ASSEMBLY (206L HIGH AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

# **GENERAL NOTES:**

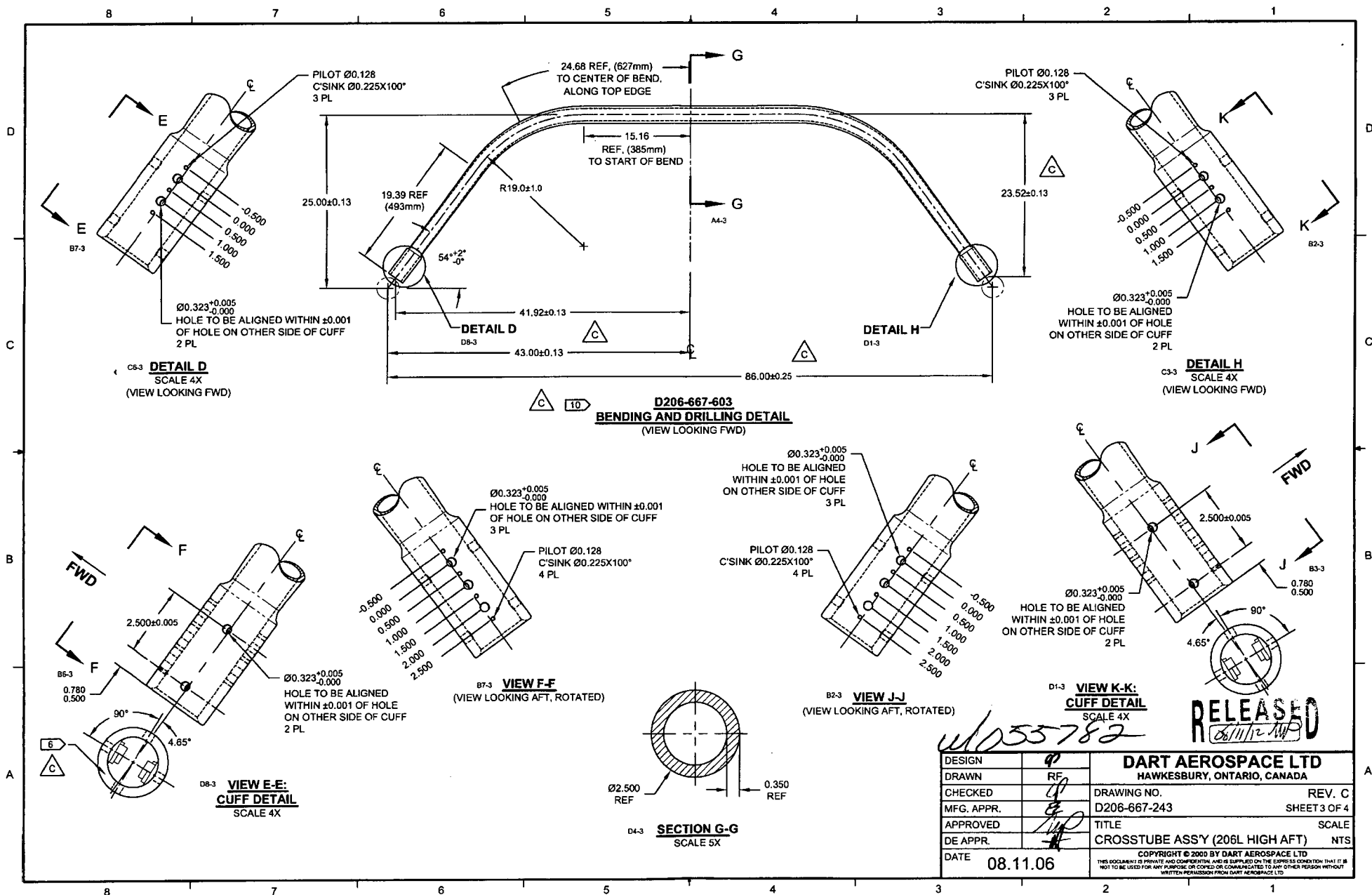
- 1) MATERIAL: MANUFACTURED FROM D6004-115  
FINISHED LENGTH = 104.91±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 21.9 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 55782  
PS 10-2-01

RELEASED  
8/11/2006

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-450 WAS D2856-400-773 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN 4-3, C5-3, D3-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	90	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	CP		
MFG. APPR.	90		
APPROVED	90		
DE APPR.	90	DRAWING NO. D206-667-243 REV. C TITLE CROSSTUBE ASSY (206L HIGH AFT) SCALE NTS	
DATE	08.11.06	<small>COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

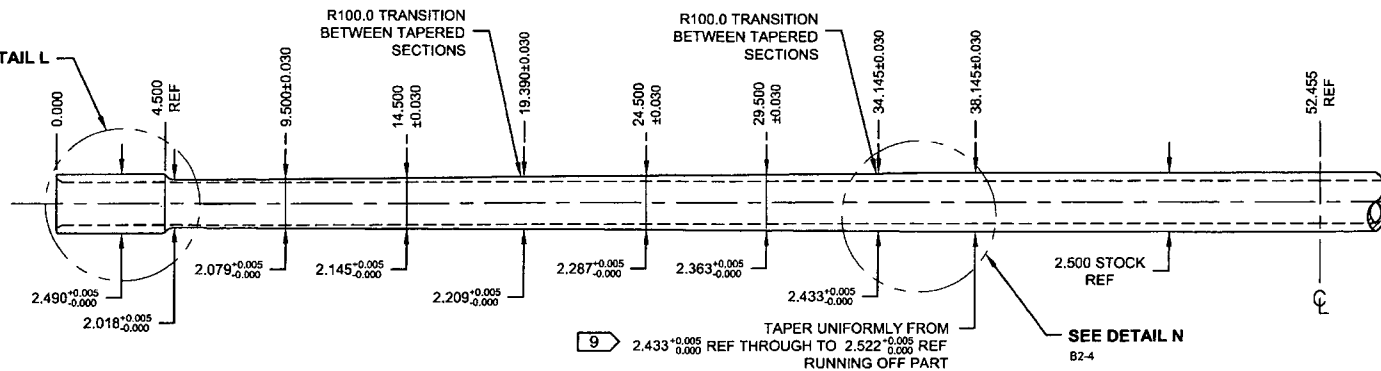




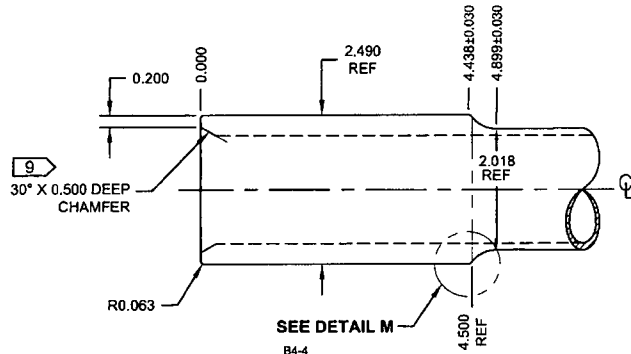
DESIGN	0	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CP	DRAWING NO.	REV. C
MFG. APPR.	GP	D206-667-243	SHEET 3 OF 4
APPROVED	1/1	TITLE	SCALE
DE APPR.	1/1	CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD			



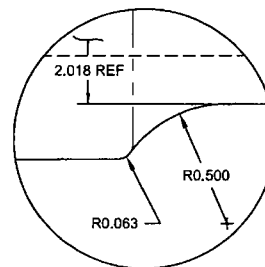
SEE DETAIL L  
B7-4



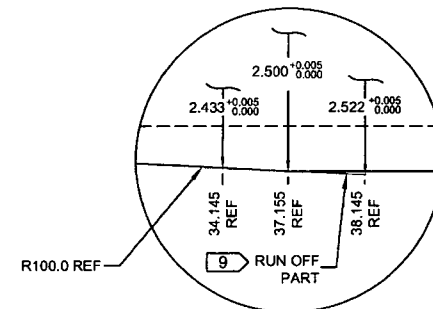
**C TURNING DETAIL**



C7-4 **DETAIL L: CROSSTUBE CUFF**  
NOT TO SCALE



B6-4 **DETAIL M: CUFF TRANSITION**  
NOT TO SCALE



**DETAIL N:**  
C4-4 **TAPER RUN-OFF**  
NOT TO SCALE

10055782

DESIGN	9	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. C
CHECKED	CP	D206-667-243	SHEET 4 OF 4
MFG. APPR.	EP	TITLE	SCALE
APPROVED	24P	CROSSTUBE ASSY (206L HIGH AFT)	NTS
DE APPR.		COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	
DATE	08.11.06		

**RELEASED**  
08/11/12

## 5.0 PARTS LIST

Item	Qty -011	Qty -013	Qty -015	Qty -101	Qty -201	Qty -103	Qty -203	Qty -105	Qty -205	Part Number	Description
	X									D206-667-011	SPACER BLOCK KIT
		X								D206-667-013	NUT PLATE KIT (-101/-103/-105/-203/-205)
			X							D206-667-015	NUT PLATE KIT (-201)
				X						D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD
					X					D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
						X				D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD
							X			D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT
								X		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD
									X	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT
1				1						D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD
2					1					D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT
3						1				D206-667-143	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD
4							1			D206-667-243	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT
5								1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD
6									1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT
10				*2	*2	*2		*2		D2891-1	SUPPORT
11							*2			D2892-1	SUPPORT
12									*1	D2894-1	SUPPORT
13				*2	*2	*2		*2		D2856-400-694	ABRASION STRIP
14							*2		*2	D2856-400-773	ABRASION STRIP
15									*1	D2856-600-851	ABRASION STRIP
16				*4	*4	*4		*4		MS21920-20	CLAMP
17							*4		*4	MS21920-22	CLAMP
18									*2	MS21920-24	CLAMP
19				4	4	4		4		AN5-32A	BOLT
20							4		4	AN5-34A	BOLT
21				4	4	4	4	4	4	MS21042L5	NUT (OR MS21042-5)
22				8	8	8	8	8	8	AN960JD516	WASHER
23									*2	D3190-1	CHAFING SHIELD
30	8									AN4-6A	BOLT
31	8									AN4-7A	BOLT
32	16									AN960JD416	WASHER
33	2									D3193-041	SPACER BLOCK ASSEMBLY
40		2		*2		*2	*2	*2	*2	D2873-043	NUT PLATE
41		2		*2		*2	*2	*2	*2	D2873-045	NUT PLATE
42			2		2					D2872-043	NUT PLATE
43			2		2					D2872-045	NUT PLATE
44		10		10		10				AN5-7A	BOLT
45		10	10		10		10	10		AN5-10A	BOLT
46		4	4	4	10	4		4		AN5-30A	BOLT
47		4					4		4	AN5-32A	BOLT
48		18	18	10	12	10	10	10		AN960JD516	WASHER
49		4	4		6					MS21042L5	NUT (OR MS21042-5)

\*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/241/143/243, &amp; D407-667-145/245 ASSEMBLIES ABOVE

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



## LIQUID PENETRANT TEST REPORT

P- 15318

PAGE 1 OF 1

IN

EXAMINED

DATE Feb 11-2010

DATE

FEB 11-2010

TIME

AM ☒

OF

PM ☐LINDA / CHANTAL

ACUREN JOB NO.

122-10-0051127 ABIDEEN ST.

PO/WO NO.

11364WALKESBURY IN. K&H INT

WORK LOCATION

SHOP

ACCEPTANCE STD.

ASTM 1417

REV./DATE

2007F.P.I. on CROSS TUBES

## DESCRIPTION

PROCEDURE NO. LT-2002 REV./DATETECHNIQUE NO. LT-2002 REV./DATEMATERIAL Aluminum THICKNESSWET FLUORESCENT LIQUID PENETRANT INSPECTION  
CARRIED OUT 100% EXTERNAL

## DETAILS

☒ FLUORESCENT☐ VISIBLE☒ WATER WASH☐ SOLVENT REMOVABLE☐ POST EMULSIFIEDBRAND LIASOFLUXBLACK LIGHT S/N 16459☒ OUTPUT > 1000  $\mu$ W/cm<sup>2</sup>☐ AMBIENT < 2 fcINT 2407 MINIMUM DWELL TIME 45 MIN.LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT☐ OUTPUT > 100 fc @ SURFACEINT REMOVER 720 MINIMUM DRY TIME >10 MIN.OTHER LABINOPER SKD 52 MINIMUM DWELL TIME 10 MIN.LIGHT METER S/N 1098866

CAL DUE DATE

MAY 7-2010PER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

## SURFACE

CONDITION ☐ AS GROUND☐ AS WELDED☒ MACHINED☐ SHOT BLASTED☐ CLEAN BARE METALTEMPERATURE ☐ < -4°C/20°F☐ -4°C/20°F TO 10°C/50°F☒ 10°C/50°F TO 52°C/125°F☐ > 52°C/125°FTS- ☐ METRIC ☐ IMPERIAL

CROSS TUBE W.C. 55759 ✓  
CROSS TUBE W.C. 55760 ✓  
CROSS TUBE W.C. 55779 ✓  
CROSS TUBE W.C. 55780 ✓

CROSS TUBE W.C. 55781 ✓  
CROSS TUBE W.C. 55782 ✓  
CROSS TUBE W.C. 55134 ✓  
CROSS TUBE W.C. 55135 ✓

ALL ITEMS EXAMINED ON  
THIS REPORT HAVE BEEN  
ACCEPTED TO STANDARD.

10 02 17

Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that the opinions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## TECHNICIANS

REPRESENTATIVE

Jan Titian

PRINT

SIGNATURE

DTR # E27362

TECHNICIAN (SIGNATURE):

Mike Fuchs1<sup>ST</sup> TECHNICIAN2<sup>ND</sup> TECHNICIAN

(PRINT):

CGSB LEVEL 2 SNT LEVEL 2CGSB REG. NO. 66606CGSB LEVEL 2 SNT LEVEL 2CGSB REG. NO. 66606

REPORT

REVIEWED BY:

NAME

INITIALS

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

PT Sept 2005